CLAIMS

What is claimed is:

1. A method for improving the depth of field and resolution of microscopy, comprising:

fixing a sample;

performing an obverse scanning and an opposite scanning to the sample for obtaining obverse scanning images and opposite scanning images;

adjusting the opposite scanning images by referring to the obverse scanning images; and

combining the obverse and the opposite scanning images to obtain a complete three-dimensional image.

2. The method according to claim 1, wherein the sample is fixed with embedding gel.

3. The method according to claim 2, wherein said adjusting the opposite scanning images by referring to the obverse scanning images step comprises:

choosing one image from the obverse scanning images;

comparing said image with every opposite scanning images;

employing fast Fourier Transferring theory for finding images of the opposite scanning images most similar to said image chosen from the obverse scanning image;

adjusting the relative shift and rotation of said images of the opposite scanning images most similar to said image chosen from the

obverse scanning images;

choosing an area suitable for performing relative matching; and

positioning the overlapping position of the obverse scanning images and the opposite scanning images on Z axial.

4. The method according to claim 3, wherein said area for performing relative matching is chosen by Sobel edge checking concept.

5. The method according to claim 1, wherein said obverse scanning and said opposite scanning are performed with a multiple photon microscope.

6. The method according to claim 1, wherein said obverse scanning and said opposite scanning are performed with a confocal microscope.

7. The method according to claim 1, further comprising employing a single wavelength activated light during the obverse scanning and the opposite scanning.

8. The method according to claim 1, further comprising employing a multiple wavelength activated light during the obverse scanning and the opposite scanning.

9. A method for improving the depth of field and resolution of microscopy, comprising:

fixing a sample;

performing an obverse scanning and an opposite scanning to the sample for obtaining obverse scanning images and opposite scanning images;

choosing one image A from the obverse scanning images;

comparing said image with every opposite scanning images;

finding images K of the opposite scanning images most similar to said image A;

adjusting the relative shift and rotation of said images K;

positioning the overlapping position of the obverse scanning images and the opposite scanning images on Z axial; and

combining the obverse and the opposite scanning images to obtain a complete three-dimensional image.

10. The method according to claim 9, wherein the sample is fixed with embedding gel.

11. The method according to claim 9, wherein said images K are chosen with the fast Fourier Transferring theory.

12. The method according to claim 9, after adjusting the relative shift and rotation of said images K, further comprises a step of choosing an area suitable for performing relative matching.

13. The method according to claim 12, wherein said area for performing relative matching is chosen by Sobel edge checking concept.

14. The method according to claim 9, wherein the shift in said step of adjusting the relative shift and rotation of said image K is on X

Y plane.

15. The method according to claim 9, wherein the rotation in said step of adjusting the relative shift and rotation of said image K is pivoted with Z axial.